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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TAKAOKA, DEAN O	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/799,347	JUENEMANN ET AL.	
	Examiner	Art Unit	
	Dean O. Takaoka	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,14-20 and 24-32* is/are rejected.

7)☒ Claim(s) *12,13 and 21-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims 1 – 16 is withdrawn in view of the newly discovered reference(s) to Cites et al. Rejections based on the newly cited reference(s) follow.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "coaxial lines" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Applicant discloses the "coaxial lines" connected by corresponding plug connections to external connections 114 and 116 are not shown in Fig. 3 (page 8, lines 3-6).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1, 3, 7 and 12 are objected to because of the following informalities:

The phrase "a feeded wave at connection" (claim 1, line 5 et al.) in claims 1, 3 and 7 is not clear where the "connection" appears indefinite and where the word "feeded" does not appear as a correct word.

The phrase "with two adjacent ground conductors to a second connection" in claim 12 is not clear where the "connection" appears indefinite.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15, 16 and 27 – 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15 and 27 – 29 recite the limitation "**the** air bridges" in pages 5 and 8. There is insufficient antecedent basis for this limitation in the claim. No previous "air

bridge" is appears named in the claims (or previous named claims), thus the claims are indefinite.

Claims 16 and 30 – 32 recite the limitation "coaxial feed lines" in pages 5, 8 and 9. There is insufficient antecedent basis for this limitation in the claim. No previous "coaxial feed line" is appears named in the claims where the phrase such as "further comprising" with respect to the device elements is not used, thus the claims are indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 10 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Cites et al. (U.S. Patent No. 6,734,755).

Claim 1.

Cites et al. shows a directional coupler in coplanar waveguide technology (i.e. CPW and best shown in Fig. 3) comprising at least one first directional coupler unit (10) with a first connection (i.e. 120 coupled to RF input 702, 720) for feeding in or guiding out a wave, a second connection (output connections 100, 411) for feeding in or guiding out a wave supplied directly from or to the first connection, a coupled connection (also

shown as output 100, 411) for coupling a fraction of **a feeded wave at connection**, a termination (784), a first center conductor (200, 220) connecting the first connection and the second connection, a second center conductor (also shown as 200, 220) connecting the coupled connection and the termination, and coplanar ground conductors (21, 22; best shown in Fig. 4 adjacent to central line 120, 20) bordering the outside of each of the center conductors, characterized in that the spacing between the two center conductors changes along the longitudinal extension of the center conductors over a coupler section (at least at the coupled ends where the ends curve away from each other).

Claim 2:

The spacing between the center conductors increases exponentially in the direction from the first connection and/or from the coupled connection towards the second connection and/or towards the termination (where the curved spacing between the ends of the coupled lines may be defined as a exponential function).

Claim 3.

A directional coupler in coplanar waveguide technology comprising at least one first directional coupler unit with a first connection for feeding in or guiding out a wave, a second connection for feeding in or guiding out a wave supplied directly from or to the first connection, a coupled connection for coupling a fraction of **a feeded wave at connection**, a termination, a first center conductor connecting the first connection and the second connection, a second center conductor connecting the coupled connection and the termination and ground conductors bordering the outside of each of the center

conductors (discussed in the reasons for rejection of claim 1 above) characterized in that the spacing in each case between a center conductor (120) and an adjacent ground conductor (121, or 122) changes along the longitudinal extension of the center conductor over a coupler section (where the longitudinal extension may defined as the X or Y axis; where Cites et al. shows spacing of adjacent ground changing at the port extension along the Y axis).

Claim 4.

The spacing in each case between a center conductor (220, 200) and an adjacent ground conductor increases or decreases in a linear manner between two adjacent coupler segments originally of constant width (Fig. 3 – where the original coupler segments of constant width of the coupler is along the X axis; where the change of ground spacing occurs along the Y axis, i.e. 511 and 512, in a linear manner).

Claim 5.

The spacing in each case between a center conductor (120) and an adjacent ground conductor (20, 21) lies above a predetermined lower limit value gMIN and below a predetermined upper limit value gMAX (where linear spacing such as shown by gap trench 500 is defined by limits – col. 7, line 35 thru col. 9, line 15).

Claim 6.

The spacing between the two center conductors changes along the longitudinal extension of the center conductor over the coupler section (where the spacing at the ends of the coupled section along the X axis change).

Claim 7.

A directional coupler in coplanar waveguide technology comprising at least one first directional coupler unit with a first connection for feeding in or guiding out a wave, a second connection for feeding in or guiding out a wave supplied directly from or to the first connection, a coupled connection for coupling a fraction of **a feeded wave at connection**, a termination, a first center conductor connecting the first connection and the second connection, a second center conductor connecting the coupled connection and the termination and ground conductors bordering the outside of each of the center conductors (discussed in the reasons for rejection of claim 1 above) characterized in that the width of the conductor track of the two center conductors changes along the longitudinal extension of the center conductor over a coupler section (where the longitudinal extension may defined as the X or Y axis; where Cites et al. shows the conductor width changing at the port extensions along the Y axis).

Claim 8.

The width of the conductor track of the center conductors increases continuously in the direction from the first connection and/or from the coupled connection towards the second connection and/or the termination (where the increasing coupled port end sections are analogous to that shown by the Applicant, thus increasing continuously).

Claims 9, 10 and 17.

The spacing between the two center conductors changes along the longitudinal extension of the center conductors over the coupler section (discussed in the reasons for rejection of claims 6 above).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11 and 18 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cites et al. as further exemplified by Kwong (U.S. Patent No. 6,753,679) and Geekie (U.S. Patent No. 4,843,027).

Cites et al. teaches the directional coupler in coplanar waveguide technology further comprising a termination (i.e. resistor 784) (discussed in the reasons for rejection of claims 1, 3 and 7 above) but does not teach the device terminated with a specific well-known art-recognized equivalent shape such as a trapezoidal absorber (i.e. resistor) where the resistor of Cites et al. is generic.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the generic resistor disclosed by Cites et al. with a trapezoidal shaped resistor. Such a modification would have been obvious where the modification would have been a mere substitution of well-known art-recognized equivalent resistor shapes (as exemplified by Kwong and Geekie where the trapezoid resistors are known and where Kwong et al. teaches substitution of equivalent shaped resistors – col. 6, lines 26-30), further where the shape of the absorber is not critical in the device (unless the Applicant can distinctly point out where in the disclosure, the criticality of the claimed absorber shape), thus suggesting the obviousness of the modification.

Claims 14, 15 and 24 – 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cites et al. in view of Sabatier et al. (U.S. Patent No. 4,732,445).

Cites et al. teaches the directional coupler in coplanar waveguide technology (discussed in the reasons for rejection of claims 1, 3 and 7 above) but does not teach the ground conductors are connected via air bridges and/or regions of wider spacing between the ground conductors are connected via bonding wires.

Sabatier et al. (Fig. 3) shows a similar coplanar coupler with a center conductor (VHF) and adjacent ground planes (BL1, BL2) where the ground conductors are connected via air bridges and/or regions of wider spacing between the ground conductors are connected via bonding wires (12 where the wire bond comprises an air bridge, metallic layer and a thin layer of air).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device disclosed by Cites et al. with the bond wire connection of Sabatier et al. Such a modification would have been obvious where the modification would have provided elimination of spurious responses caused by coupling (Sabatier et al. – col. 3, lines 30-35), thus suggesting the obviousness of the modification.

Allowable Subject Matter

Claims 12, 13 and 21 – 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 16 and 30 – 32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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June 7, 2006